15. (Amended and Rewritten) The method of claim 11, wherein, the sequence of data symbols has a data symbol $d_n$ at a current symbol time n where n is an integer and has a data symbol $d_{n-1}$ at an immediate previous symbol time n-1 for precoding the data sequence into the sequence precoded data symbols having a precoded data symbol $\alpha_n$ at the current symbol time, the precoding step is defined by $\alpha_n = [\ d_n - d_{n-1} + 3\ ]_{mod8}$.

18. (Amended and Rewritten) The method of claim 11 wherein the filtering step is a matched filtering step for applying a principal Laurent function, a third Laurent function and a twelfth Laurent function to the baseband signal so that the filtered signal comprises a principal Laurent component, a third Laurent component and a twelfth Laurent component.

## REMARKS

The specification was objected to for informalities. Applicant requests reconsideration. The specification has been accordingly amended. The claims were rejected as imparticularly claimed. Applicant requests reconsideration. The claims have been accordingly amended. Claims 1, 2, 11, 19, and 20 were rejected as anticipated by Ho. Claims 1 and 2 were rejected as anticipated by

Baker. Claims 3, 4, 5, 8, 9, 10, 11, 16, 17, 19, and 20 were rejected as unpatentable over Ho in view of the prior art. Applicant requests reconsideration. The "prior art" to which the examination refers is the Laurent bank filtering mentioned in the background section of the specification.

The invention is directed to the combination of GMSK precoding during modulation, and matched filter bank filtering during demodulation, for solving the problem of eliminating the required receiver differential decoding.

The modulation precoding enables demodulation using a match filter bank that provides amplitude modulation expansion filtering, i.e. Laurent filtering, having a plurality of expansion-filtered outputs, one of which is the principal filter response that has an absolute phase indicating the estimated data sequence. That is, particularly precoding the data stream allows for pulse amplitude modulation decomposition of the continuous phase modulated signal using amplitude modulated expansion filtering, for providing a principal response that has an absolute phase indicating the estimated data sequence. Using GMSK precoding and matched bank filtering, the receiver can estimate the data sequence without the previously required differential decoding.

The encoding in Ho is used to allow for the insertion of a pilot tone at the transmitter for purposes of improving dual errors that normally occur with conventional differential decoding, referred to in Ho as differential detection. The problem solved by Ho is to reduce pair errors occurring with differential detection. Ho solves this problem using a channel estimator with precoding. Ho is directed to solving a different problem, and has a different solution. Significantly, for channel estimation, Ho teaches the use of an anti-aliasing filter, prior to sampling, for removing out of band noise. The present invention teaches the use of matched filtering, prior to sampling, for providing an absolute phase filter response. The anti-aliasing filter in Ho is merely a brick wall low pass filter used for reducing out of band noise, so that, channel estimation is improved for solving the problem of paired errors in differential detection. Ho particularly teaches the use of anti-aliasing filtering for reduced out of band noise for improved channel estimation. The match filtering of the present invention is a bank of filters, one of which provides the principal response that has an absolute phase indicating the bit sequence of the present invention. In Ho, the anti-aliasing filter removes out of band noise and does not affect the in-band signals, where as the Laurent filtering directly affects the in-band signals. In this regard, Ho's anti-aliasing filter functions directly contrary to the present invention, as strong evidence of unobviousness.

Blaker teaches that "cross-correlating received training bits with a reference sequence of bits, an estimate of the channel is obtained." Col 2 line 45. Like Ho, Blaker does not teach direct sampling of a Laurent filter bank having a response with an absolute phase indicating the data sequence. Blaker teaches cross-correlating received bits. Neither Ho nor Blaker teach or suggest precoding modulation in combination with absolute phase response filtering demodulation. Neither Blaker nor Ho anticipate the present invention that uses precoding modulation in combination with demodulation filtering having a filter response having an absolute phase indicating the data sequence. This is confirmed by the examination on page 8. Any filtering used in the demodulator must be somehow be matched to the type filtering in the receiver. Not any filter will do, and not just any precoding will do. The inventors discovered that a particular type of precoding in combination with Laurent bank filtering would allow direct detection of the data sequence.

Obviousness is directed to both the problem solved and the solution thereto. The present invention solves the problem of having to use differential detection in CPM GMSK systems. Neither Ho nor Blaker solve this problem using Laurent filtering. The present invention solves this problem using precoding modulation in combination with matched filtering demodulation having a filter response with an absolute phase for indicating the data sequence,

that is, then used to detect the data without differential decoding. The cited references do not teach nor suggest using precoding modulation in combination with matched filtering demodulation having a filter response with an absolute phase for indicating the data sequence. Allowance of the claims is requested.

Respectfully Submitted

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